PYATNITSKIY, B.A.; FADEYEVA M.S.

Temperature quenching of phosphorescence of some aromatic acids.
Izv.AN SSSR Ser.fiz.20 no.5:524-528 '56. (MLRA 9:9)

1.Gor'kovskiy gosudarstvennyy pedagogicheskiy institut imeni M.Gor'kogo. (Phosphorescence)

PYATNITSKIY, B.A.

USSR/ Physical Chemistry - Molecule. Chemical bond B-4

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10869

Author : Pyatnitskiy B.A.
Inst : Academy of Sciences USSR
Title : Phosphorescence Spectra of Some Aromatic Acids at Temparature of Liquid Air

Orig Pub : Dokl. AN SSSR, 1956, 109, No 3, 503-506

Abstract : Phosphorescence spectra at temperature of liquid air were obtained in the visible region for alcoholic solutions of benzoic (I), phthalic (II) and gallic (III) acid. Microphograms of spectra and a table of frequencies of phosphorescence maxima are included. Frequencies conform to the formula
$\nu = \nu_0 - n_1\nu' - n_2\nu'' - n_3\nu''' - n_4\nu^{IV}$ (1), where n_1, n_2, n_3 --constants of each maximum, and ν_0, ν', ν'', ν''' and ν^{IV} have the values (in cm^{-1}) for I 24685, 313, 608, 1187, 826; for II 21739, 313, 608, 1182, 992; for III 232-83, 313, 608, 1187.
From formula (1) are formed series formulas for each spectrum. Phosphorescence spectrum of I in visible region extends from 4047 to 5837 A and consists of 8 bands; II from 4034 to 5837 A and consists of 5 bands; III from

Card 1/2

USSR/ Physical Chemistry - Molecule. Chemical bond B-4

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 10869

4276 to 6293 A and consists of 10 bands. For I and III equal series occur of the form $\nu = \nu_1' - n_1\nu'$, $\nu = \nu_1 - n_2\nu''$.

Card 2/2

PYATNITSKIY, B.A.

Phosphorescence spectra of various aromatic acids at the temperature of liquid air. Izv.AN SSSR.Ser.fiz. 22 no.11:1304-1306 N '58. (MIRA 11:12)

(Phosphorescence) (Acids, Organic)

SOV/51-7-4-30/32

AUTHOR: Pyatnitskiy, B.A.

TITLE: On M.G. Kaminskiy's Paper "On the Problem of the Ballistic Method of Investigation of Phosphorescence Decay"

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 4, pp 577-578 (USSR).

ABSTRACT: The present author (Pyatnitskiy) answers Kaminskiy's criticisms (Ref 1), by showing that Kaminskiy's ballistic-galvanometer throw formula is simply a special case of a more general expression deduced by Pyatnitskiy (Eq 1). Kaminskiy's doubts about the present author's results on phosphorescence decay, measured with a ballistic galvanometer, are rejected on the basis that the intensities of emission at the end of each second of decay, and not light sums, were measured (a table on p 578). There are 1 table and 14 references, 13 of which are Soviet and 1 German.

SUBMITTED: February 5, 1959

Card 1/1

24(7) SOV/48-23-1-30/36

AUTHOR: Pyatnitskiy, B. A.

TITLE: The Oscillation Structure of the Phosphorescence Spectra of Aromatic Acids at Temperatures of Liquid Oxygen (Kolebatel'naya struktura spektrov fosforestsentsii aromaticheskikh kislot pri temperature zhidkogo kisloroda)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 1, pp 135 - 138 (USSR)

ABSTRACT: The bands of the phosphorescence spectra of aromatic acids have an oscillation structure. They are due to the transition of molecules from the excited metastable level to various oscillation levels of the ground state. The metastable states are essential for the benzene nucleus (Terenin, reference 4). In the present paper the phosphorescence spectra of benzene-, phthalic- and salicylic acid both in the crystalline state and in an aqueous and an alcoholic solution. The present paper is a continuation of one of the author's previous papers (Ref 3). The microphotographs of the spectra are shown by figures. Wave lengths were determined by interpolation according to the formula by Hartmann (Gartman). The spectra consist

Card 1/2

of broad basic bands having many maxima. These bands are particularly marked in the spectra of the crystalline acids. In the spectra of aqueous and alcoholic solutions the basic band is less marked and has many narrow components. Aqueous solutions have the most components. In all spectra the short-wave part is less split up into narrow bands, it is broader and more intense, and the long-wave bands are particularly weak in solutions. The character and the number of bands in the phosphorescence spectra depend on the molecular and crystal structure of the acids, but also on the solvents. The author thanks T. Ya. Sere and S. O. Golub for placing the microphotometer at their disposal, and he further thanks N. A. Orlovskaya for her assistance. There are 3 figures and 6 Soviet references.

TEPLYAKOV, P.A.; PYATNITSKIY, B.A.

Effect of the solvent and temperature on the phosphorescence spectra of phenanthrene. Izv.vys.ucheb.zav.; fiz. no.5:84-89 '61.
(MIRA 14:10)

1. Odesskiy elektrotekhnicheskiy institut svyazi.
(Phenanthrene--Spectra)

PYATNITSKIY, B. A.; GROSSMAN, A. Ya.; KRASNOVA, V. V.; VLASENKO, A. I.

Phosphorescence of naphthalene and some of its derivatives at the temperature of liquid oxygen. Izv. vys. uch. zav.; fiz. 3: 41-44 '62. (MIRA 15:10)

1. Odesskiy elektrotekhnicheskiy institut svyazi.

(Naphthalene) (Phosphorescence)
(Low temperature research)

PYATNITSKIY, B.A.; VLASENKO, A.I.

Phosphorescence of carbazole and phenanthrene at the temperature of liquid oxygen. Izv. AN SSSR Ser. fiz. 27 no.5:647-650 My '63. (MIRA 16:6)

1. Odesskiy politekhnicheskiy institut.
(Carbazole--Spectra)
(Phenanthrene--Spectra)

PYATNITSKIY, F.

Black-and-white exposure testing. Sov.foto 22 no.1:34-35 Ja '62. (MIRA 15:1)
(Color photography--Exposure)

PYATNITSKIY, F.

Grey light filters. Sov.foto 20 no.2:32-33 F '60.
(MIRA 13:7)

(Photography--Light filters)

PYATNITSKIY, Fedor Sergeyevich; IOFIS, Ye.A., kand.tekhn.nauk, red.; BOGATOVA, V.S., red.; MALEK, Z.N., tekhn.red.

[Determining exposure time in picture taking and printing] Opredelenie ekspozitsii pri s"emke i pechati. Pod red. E.A. Iofisa. Moskva, Gos.izd-vo "Iskusstvo," 1960. 93 p. (Biblioteka fotoliubitelia, no.20).

(MIRA 13:11)

(Photography--Exposure)

ACCESSION NR: AP4019845 S/0181/64/006/003/0827/0830

AUTHORS: Kessenikh, A. V.; Manenkov, A. A.; Pyatnitskiy, G. I.

TITLE: Discussion of experimental data on dynamic polarization of protons in irradiated polyethylenes

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 827-830

TOPIC TAGS: polarization, polyethylene, ultra high frequency irradiation, magnetic resonance, magnetic property

ABSTRACT: The authors have investigated samples of polyethylene of high density, containing 10^{18} - 10^{19} cm^{-3} polyene radicals: $CH_2-(CH)_{2M-1}-CH_2$, where $M > 2$. Studies were made at 77, 4.2, and 1.6K. The frequency of the ultra-high-frequency generator was kept constant, but the magnetic field was varied, and the intensity of the nuclear magnetic resonance signal was measured in its relation to the magnetic field. It was assumed that the relations between the probabilities of different spin transitions, during ultra-high-frequency irradiation of paramagnetic centers with irregularly expanded electron paramagnetic

Card 1/2

ACCESSION NR: AP4019845

resonance lines, are determined by the relations among rates of establishing equilibrium within the spin system and equilibrium of spin with the lattice. The dynamic polarization of protons was found to decline very rapidly (negative values) with increase in magnetic field, reach a minimum, then increase very rapidly (passing through zero) with further increase in field, reach a maximum, and then decline again. Theoretical values were found to correspond closely to experimental values in values of magnetic field where the minimums and maximums occur, but the theoretical values of the minimum and maximum proved to be numerically greater than the experimental values. The authors point out that it is possible to compute, within the framework of the model they employ, the effect of combination spin transition saturation on electron polarization, which cannot generally be neglected in calculations. Orig. art. has: 2 figures and 3 formulas.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moscow (Physico-chemical Institute)

SUBMITTED: 02Sep63 DATE ACQ: 31Mar64 ENCL: 00

SUB CODE: SS, EC NO REF SOV: 004 OTHER: 003

Card 2/2

PYATNITSKIY, G.I. (Moskva)

Effect of random processes discontinous control systems. Avtom. i telem. 21 no.5:585-594 My '60. (MIRA 13:7)
(Automatic control)

PYATNITSKIY, G.I. (Moskva)

Effect of stationary random processes on automatic control systems containing essentially nonlinear elements. Avtom.i telem. 21 no.4:474-480 Ap '60. (MIRA 13:6)
(Automatic control)

PYATNITSKIY, F.

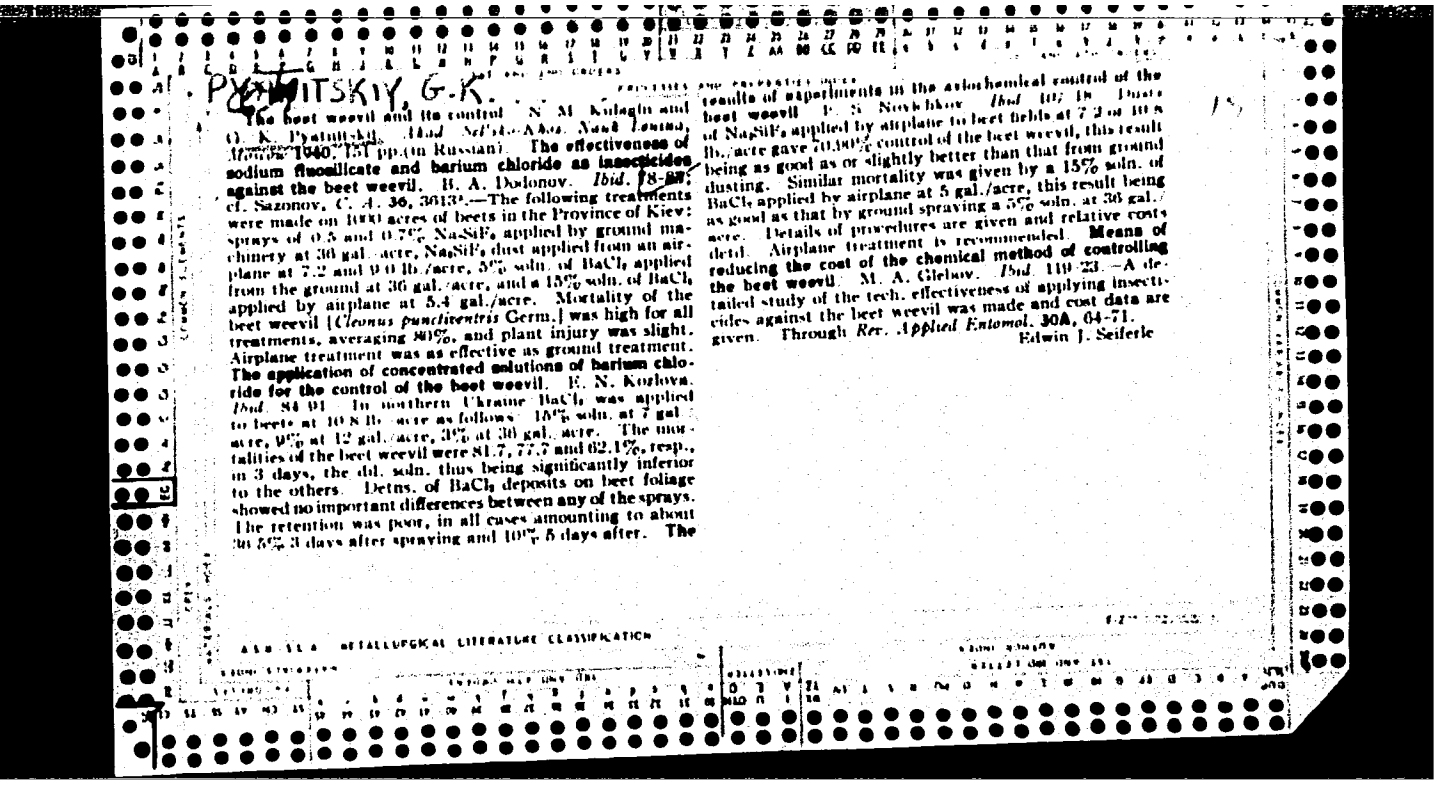
Automatic exposure meter. Sov. foto 17 no.3:56 Mr '57. (MLRA 10:6)
(Photography--Exposure)

PYATNITSKIY, G. A. I Vinokurova, T. P.

29526

Vliyaniye Tyempyeratury Na Fosforyestsyetsiyu Difyenila. Doklady Akad. Nauk SSSR, Novaya Syeriya, t, LXVIII, No 3, 1949, S. 483-85 - Bibliogr: s. 485

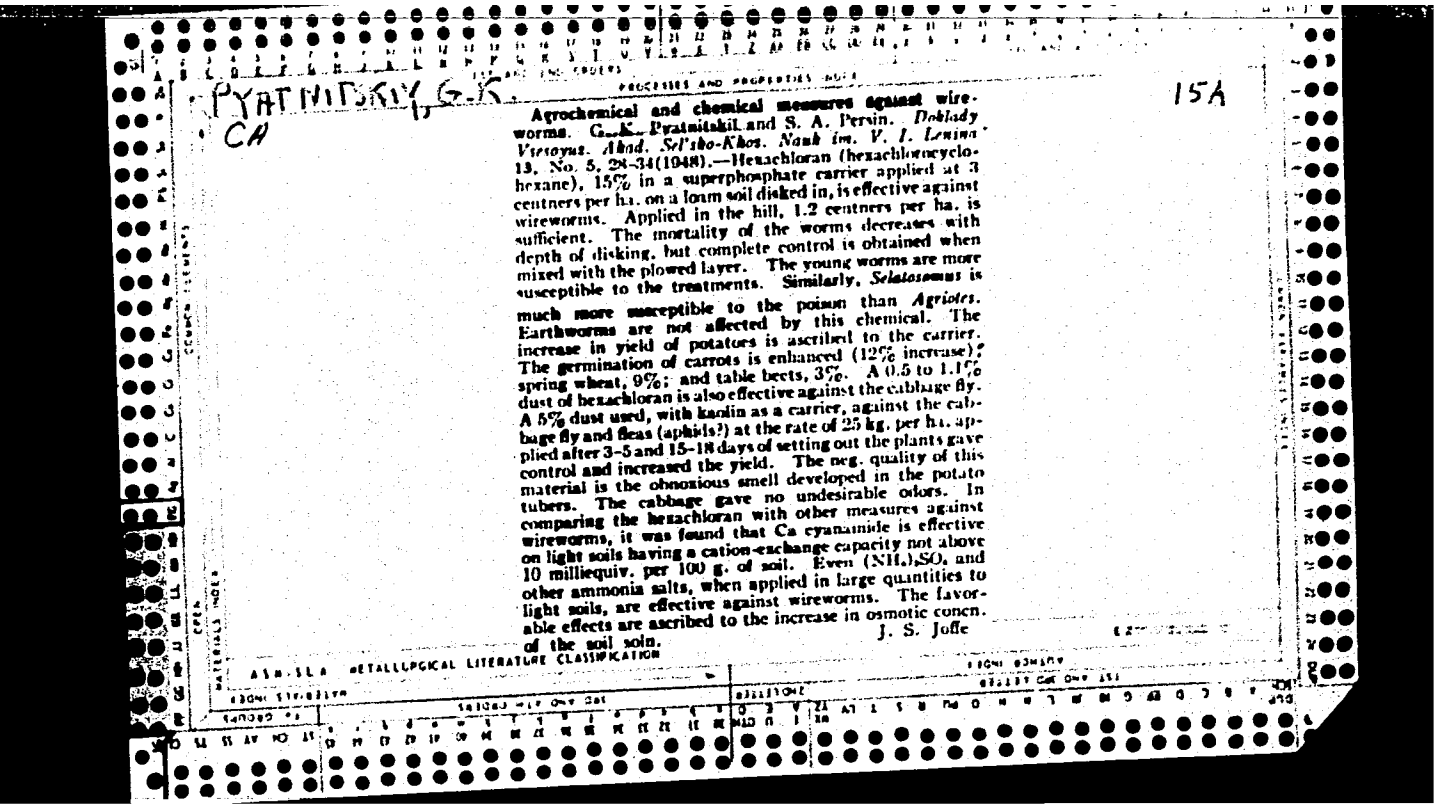
So: Letopis' No. 40



PYATNITSKIY, G.K.

The beet weevil and its control. N. M. Kulagin and G. K. Pyatnitskii. *Izdat. Sel'skokhoz. Nauk Leningr. Otdeleniya*, 1940. 151 pp. (in Russian). **The effectiveness of sodium fluosilicate and barium chloride as insecticides against the beet weevil.** B. A. Dolonov. *Ibid.* 78–87; cf. Sazonov, *C. A.* **36**, 3613⁸.—The following treatments were made on 1000 acres of beets in the Province of Kiev: sprays of 0.5 and 0.7% Na_2SiF_6 applied by ground machinery at 30 gal./acre, Na_2SiF_6 dust applied from an airplane at 7.2 and 9.0 lb./acre, 5% soln. of $BaCl_2$ applied from the ground at 30 gal./acre, and a 15% soln. of $BaCl_2$ applied by airplane at 5.4 gal./acre. Mortality of the beet weevil [*Cleonus punctiventris* Germ.] was high for all treatments, averaging 80%, and plant injury was slight. Airplane treatment was as effective as ground treatment. **The application of concentrated solutions of barium chloride for the control of the beet weevil.** E. N. Kozlova. *Ibid.* 84–91.—In southern Ukraine $BaCl_2$ was applied to beets at 10.8 lb./acre as follows: 10% soln. at 7 gal./acre, 9% at 12 gal./acre, 3% at 30 gal./acre. The mortalities of the beet weevil were 81.7, 77.7 and 62.1%, resp., in 3 days, the dil. soln. thus being significantly inferior to the others. Detns. of $BaCl_2$ deposits on beet foliage showed no important differences between any of the sprays. The retention was poor, in all cases amounting to about 30.5% 3 days after spraying and 10% 5 days after. **The results of experiments in the autochemical control of the beet weevil.** P. S. Novokhov. *Ibid.* 107–18. Dusts of Na_2SiF_6 applied by airplane to beet fields at 7.2 or 10.8 lb./acre gave 70.80% control of the beet weevil, this result being as good as or slightly better than that from ground dusting. Similar mortality was given by a 15% soln. of $BaCl_2$ applied by airplane at 5 gal./acre, this result being as good as that by ground spraying a 5% soln. at 30 gal./acre. Details of procedures are given and relative costs detd. Airplane treatment is recommended. **Means of reducing the cost of the chemical method of controlling the beet weevil.** M. A. Glebov. *Ibid.* 119–23.—A detailed study of the tech. effectiveness of applying insecticides against the beet weevil was made and cost data are given. Through *Rev. Applied Entomol.* **30A**, 64–71.

Edwin J. Seiferle



PYATNITSKIY, G.K.
CA

15A

Agrochemical and chemical measures against wireworms. G. K. Pyatnitskii and S. A. Persin. *Doklady Vsesoyuz. Akad. Sel'sko-Khoz. Nauk im. V. I. Lenina* 13, No. 5, 28-34(1948).—Hexachloran (hexachlorocyclohexane), 15% in a superphosphate carrier applied at 3 centners per ha. on a loam soil disked in, is effective against wireworms. Applied in the hill, 1.2 centners per ha. is sufficient. The mortality of the worms decreases with depth of disking, but complete control is obtained when mixed with the plowed layer. The young worms are more susceptible to the treatments. Similarly, *Selatosomus* is much more susceptible to the poison than *Agriotes*. Earthworms are not affected by this chemical. The increase in yield of potatoes is ascribed to the carrier. The germination of carrots is enhanced (12% increase); spring wheat, 9%; and table beets, 3%. A 0.5 to 1.1% dust of hexachloran is also effective against the cabbage fly. A 5% dust used, with kaolin as a carrier, against the cabbage fly and fleas (aphids?) at the rate of 25 kg. per ha. applied after 3-5 and 15-18 days of setting out the plants gave control and increased the yield. The neg. quality of this material is the obnoxious smell developed in the potato tubers. The cabbage gave no undesirable odors. In comparing the hexachloran with other measures against wireworms, it was found that Ca cyanamide is effective on light soils having a cation-exchange capacity not above 10 milliequiv. per 100 g. of soil. Even $(NH_4)_2SO_4$ and other ammonia salts, when applied in large quantities to light soils, are effective against wireworms. The favorable effects are ascribed to the increase in osmotic concn. of the soil soln.

J. S. Joffe

FYATNITSKIY, G. K.

25833 O sisteme effektivnogo unichtozheniya sveklovichnogo dolgonosika na mestakh ego zimovki starykh svelkyanitsakh. Trudy Vsessoyuz. in-ta zashchity rasteniy, vyp. 2, 1949, s. 8-28 Bibliogr: 12 Nazv.

SO: Letopis' Zhurnal 'nykh Statey, Vol. 34, 1949

31291
S/124/61/000/010/026/056
D251/D301

11.7200

AUTHOR: Pyatnitskiy, L.N. and Tsukhanova, O.A.

TITLE: Numerical integration of a system of equations of energy with a source for different ratios of the coefficient of diffusion to the coefficient of temperature-conduction

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 10, 1961, 82, abstract 10 B587 (V sb. 3-e Vses. soveshchaniye po teorii goreniya, v. 1, M., 1960, 35-43)

TEXT: A verification was carried out of the approximate relationships expressing the normal velocity of the spreading of flame by means of parameters which characterize the total kinetics of the chemical reactions, the activation energy E, the pre-exponential multiplier k_o, the total series of reactions t, and the series of reactions according to fuel n. The purpose of these verifications was to ascertain the accuracy, with which the kinetic coeff-

Card 1/3

Numerical integration...

icients of chemical reaction can be determined from data on the velocity of flame-spreading, making use of the relationships mentioned. The numerical integration of the equation of thermal conductivity with a source was carried out. The coefficients of the equation are reckoned to be constants, the function of the evolution of heat corresponds to simple reactions, whose total series was chosen in the range 0.33 - 2.0, and the activation energy was chosen in the range 20 - 90 kcal/mole. The equation was integrated for various compositions of the initial mixture. The results gave the relation of the velocity of normal spreading, obtained by integration to the velocity calculated according to the approximation formulae. These relations depend on E and ν but do not depend on the initial composition of the mixture. The effect is estimated of the ratio of the coefficient of diffusion to the coefficient of temperature-conduction on the effective kinetic coefficients of the reactions. It is assumed that in the case of different coefficients of diffusion and temperature-conduction the velocity of spreading may be defined by the same formulae as in the case of equality of these coefficients.

Card 2/3

Numerical integration...

It is necessary, however, to change the function of the evolution of heat to some "effective" function having a similar form to that of the second "effective" kinetic coefficient. The effective function of evolution of heat is calculated from the temperature field and the velocity distribution of the chemical reaction in the zone of combustion, obtained by L.N. Pyatnitskiy by the numerical integration of the system of equations of diffusion and thermal conductivity (Tr. V Konferentsii molodykh uchenykh. Energ. in-t. AN SSSR, v. 2, M., 1960, 34-43). It was found that by applying the ratio of the coefficient of diffusion to the coefficient of temperature-conduction in the region 1 - 10, the effective coefficient E varies by not more than 20%, n by 40%, and 1 by 100%, and the magnitude of the effective k_0 changes by several degrees. The authors conclude that the data on the velocity of flame-spreading cannot be taken at the present time as a source of detailed and trustworthy information on the mechanism of chemical reactions. [Abstracter's note: Complete translation]

Card 3/3

X

ZHAROVSKIY, Fraim Grigor'yevich [Zharovs'kyi, F.H.]; PILIPENKO, Anatoliy Terent'yevich [Pylypenko, A.T.]; PYATNITSKIY, Igor' Vladimirovich [P'iatnyts'kyi, I.V.]; KOVALENKO, M.Ya., red.; GORBUNOVA, N.M.[Horbunova, N.M.], tekhn. red.

[Analytical chemistry; quantitative analysis] Analitychna khimiia; kil'kisnyi analiz. Kyiv, Radians'ka shkola, 1962. 299 p. (MIRA 16:6)
(Chemistry, Analytical--Quantitative)

PYATNITSKIY, I.V.; KLIBUS, A.Kh.

Masking effect of some polyatomic alcohols of the aliphatic series on metal precipitation reactions. Ukr.khim.zhur. 29 no.3:245-231 '63.
(MIRA 16:4)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.
(Alcohols) (Precipitation (Chemistry)) (Metals—Analysis)

PYATNITSKIY, I.V.; KHARCHENKO, R.S.

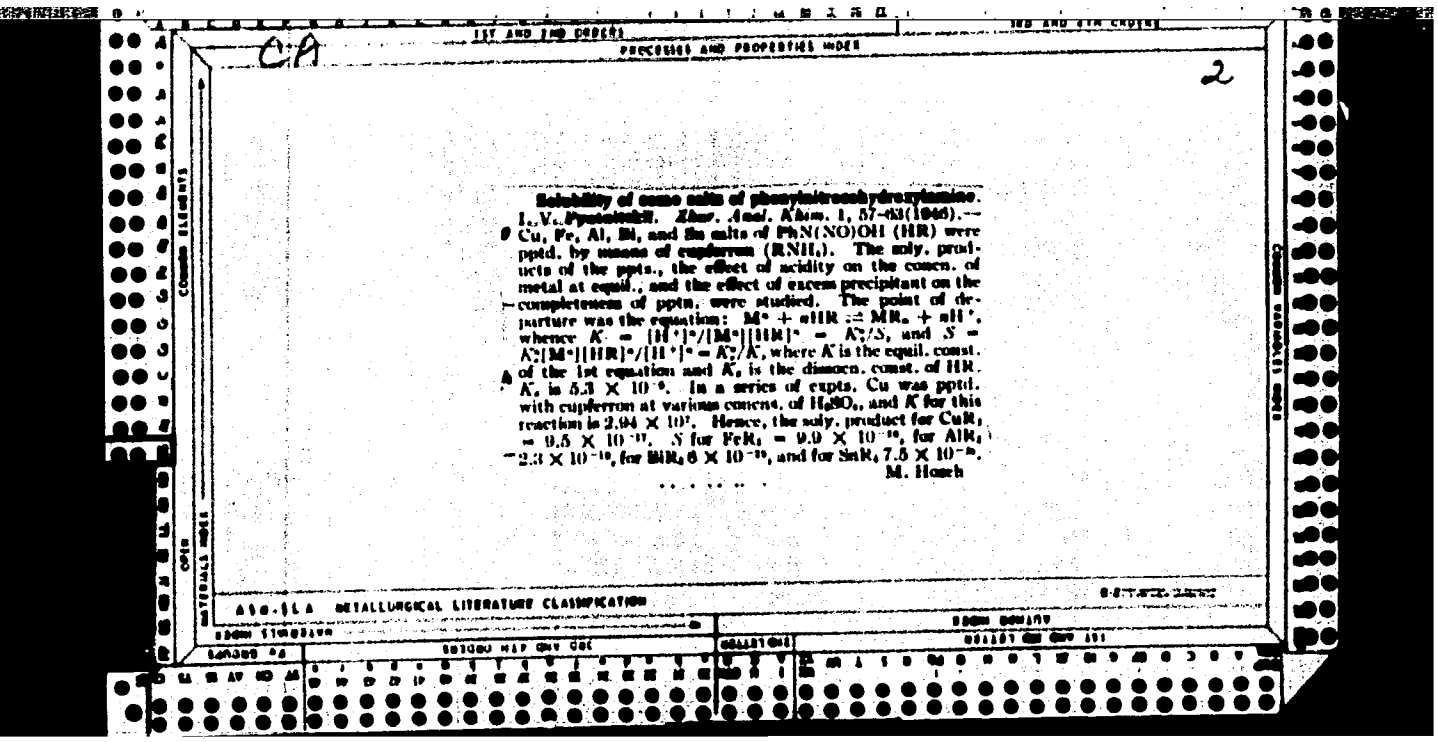
Extraction of citrate and tartrate complexes of metals in the presence of diisoamylamine. Ukr.khim.zhur. 28 no.9:1115 '62. (MIRA 15:12)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Organometallic compounds)

PYATNITSKIY, I.V.

Complex compounds of metals with hydroxy acids. Usp.khim. 32 no.1:93-119 Ja '63. (MIRA 16:2)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G. Shevchenko, kafedra analiticheskiy khimii.
(Complex compounds) (Acids, Organic)

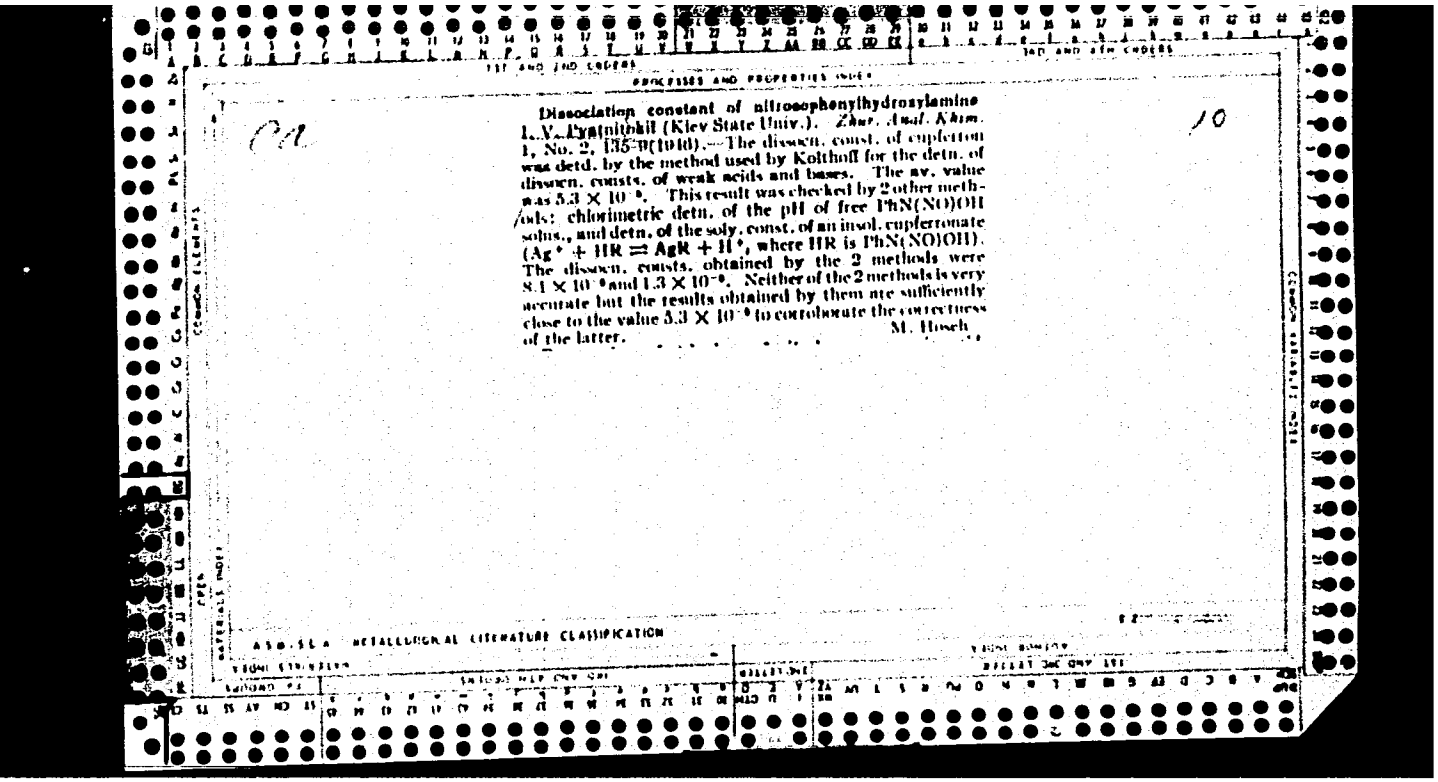


CA

2

Solubility of some salts of phenylnitrosohydroxylamine. I. V. Tananaev. *Zhur. Anal. Khim.* 1, 57–63(1946).—Cu, Fe, Al, Bi, and the salts of $PhN(NO)OH$ (HR) were ppted. by means of cupferron (RNH_4). The soly. products of the ppts., the effect of acidity on the concn. of metal at equil., and the effect of excess precipitant on the completeness of pptn. were studied. The point of departure was the equation: $M^{n+} + nHR \rightleftarrows MR_n + nH^+$, whence $K = [H^+]^n/[M^{n+}][HR]^n = A_1^n/S$, and $S = A_1^n[M^{n+}][HR]^n/[H^+]^n = A_1^n/K$, where K is the equil. const. of the 1st equation and K_a is the dissocn. const. of HR. K_a is 5.3×10^{-5}. In a series of expts. Cu was ppted. with cupferron at various concns. of H_2SO_4, and K for this reaction is 2.94×10^7. Hence, the soly. product for $CuR_2 = 9.5 \times 10^{-17}$. S for $FeR_3 = 9.9 \times 10^{-16}$, for $AlR_3 = 2.3 \times 10^{-16}$, for BiR_3 6×10^{-18}, and for SnR_4 7.5×10^{-26}.

M. Hosch



Dissociation constant of nitrosophenylhydroxylamine
L. V. Lyalnitskil (Kiev State Univ.). *Zhur. Anal. Khim.* 1, No. 2, 135–9(1946).—The dissocn. const. of cupferron was detd. by the method used by Kolthoff for the detn. of dissocn. consts. of weak acids and bases. The av. value was 5.3×10^{-9}. This result was checked by 2 other methods: chlorimetric detn. of the pH of free PhN(NO)OH solns., and detn. of the soly. const. of an insol. cupferronate solns., and detn. of the soly. const. of an insol. cupferronate ($Ag^+ + HR \rightleftarrows AgR + H^+$, where HR is PhN(NO)OH). The dissocn. consts. obtained by the 2 methods were 8.1×10^{-9} and 1.3×10^{-8}. Neither of the 2 methods is very accurate but the results obtained by them are sufficiently close to the value 5.3×10^{-9} to corroborate the correctness of the latter. M. Hosch

USSR/Chemistry-Tartaric Acid
Chemistry-Dissociation
Nov/Dec 48

"Polarographic and Potentiometric Study of Stability of Tartaric Acid Lead Complexes," I. V. Pyatnitskiy, Chair of Anal Chem, Kiev Stat U imeni T. G. Shevchenko, 12 pp

"Zhur Anal Khim" Vol III, No 6

Shows third constant of dissociation of tartaric acid is $K_{3} \geq 10^{-13}$. Determined that potentiometric and polarographic methods of studying complex lead tartrates give reliable results. The two methods are interchangeable. Accuracy of the value for the constant depends greatly on action of chrome, carbon,

49/49T33

USSR/Chemistry-Tartaric Acid (Contd) Nov/Dec 48

sulfur, and phosphoric acid anions on alkaline solutions of complex lead tartrates. Submitted 5 Jan 48.

49/49T33

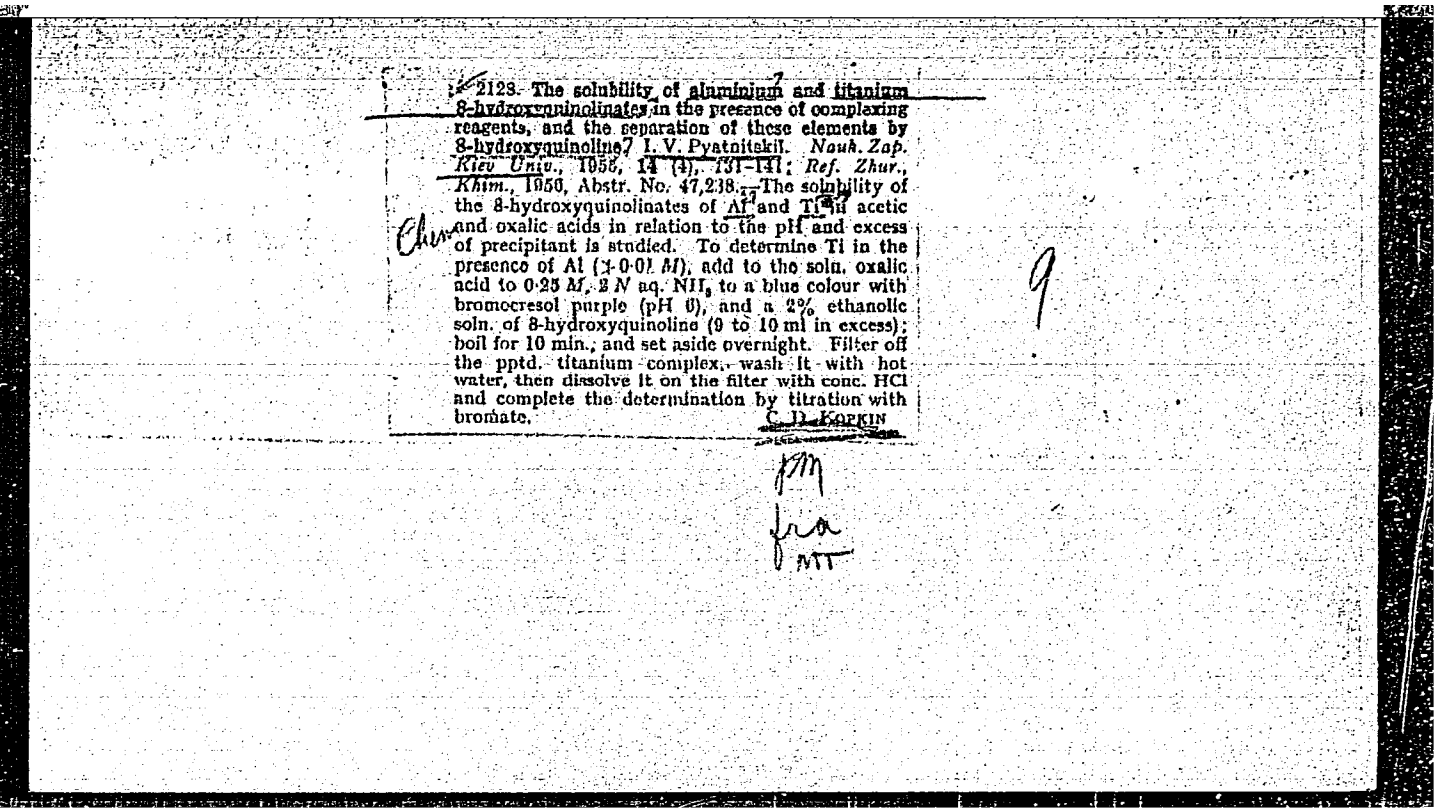
C. A.

Stability of cadmium and zinc tartrates. I. V. Pyatnitskii (T. G. Shevchenko State Univ., Kiev, Ukr.S.S.R.). *Zhur. Anal. Khim.* 6, 119-26(1951); cf. *C.A.* 45, 8010*. In alk. and ammoniacal solns. the stability of Zn tartrate complexes does not exceed the stability of zincates and ammoniates. In neutral and weakly acid solns. Zn apparently forms a slightly dissociated salt, $ZnC_4H_4O_6$. In the presence of tartrates in alk. solns. Cd forms colloidal hydroxide. In neutral and weakly acid solns. Cd behaves similarily to Zn. M. Hosch

PYATNITSKIY, I.V.; DANILOVA, V.N.

Polarographic determination of tin in metallic copper. Ukr. khim.zhur. 19 no.4:434-438 '53. (MLRA 8:2)

1. Kiyevskiy gosudarstvennyy universitet im.T.G.Shevchenko, kafedra analiticheskoy khimii.
(Tin) (Copper) (Polarograph and polarography)



2123. The solubility of aluminium and titanium 8-hydroxyquinolinates in the presence of complexing reagents, and the separation of these elements by 8-hydroxyquinoline. I. V. Pyatnitskii. *Nauk. Zap. Kiev Univ.*, 1956, 14 (4), 131–141; *Ref. Zhur., Khim.*, 1956, Abstr. No. 47,238.—The solubility of the 8-hydroxyquinolinates of Al and Ti in acetic and oxalic acids in relation to the pH and excess of precipitant is studied. To determine Ti in the presence of Al (≤ 0·01 *M*), add to the soln. oxalic acid to 0·25 *M*, 2 *N* aq. NH_3 to a blue colour with bromocresol purple (pH 6), and a 2% ethanolic soln. of 8-hydroxyquinoline (9 to 10 ml in excess); boil for 10 min., and set aside overnight. Filter off the pptd. titanium complex, wash it with hot water, then dissolve it on the filter with conc. HCl and complete the determination by titration with bromate.

C. D. Kopkin

Chem

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Lea
MIT

PYATNITSKIY, I. V.

USSR/ Chemistry - General chemistry

Card 1/1 Pub. 116 - 7/24

Authors : Pyatnitskiy, I. V., and Gorbataya, A. I.

Title : About the composition and stability of a tartrate iron complex

Periodical : Ukr. khim. zhur. 21/2, 182-194, 1955

Abstract : Investigation was conducted to determine the composition, stability and structure of a yellow complex tartrate iron in solution. The pH limits within which the formation of the yellow complex takes place were established. Results obtained by the polarographic and potentiometric methods are tabulated. Ten references: 3 USSR, 4 German and 3 USA (1900-1949). Tables; graphs.

Institution : The T. H. Shevchenko State University, Kiev

Submitted : December 12, 1953

PYATNITSKIY, I.V.

Developments in the polarographic analysis of inorganic substances.
Zav.lab.21 no.7:798-807 '55. (MLRA 8:10)
(Polarography)

BABKO, Anatoliy Kirillovich; PYATNITSKIY, Igor' Vladimirovich; ALIMARIN, I.P., redaktor; DYMOV, A.M., professor, redaktor; LUR'YE, Yu.Yu., professor, redaktor; FILIPPOVA, N.A., redaktor; LUR'YE, M.S., tekhnicheskiy redaktor

[Quantitative analysis] Kolichestvennyi analiz. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1956. 736 p. (MLRA 9:11)

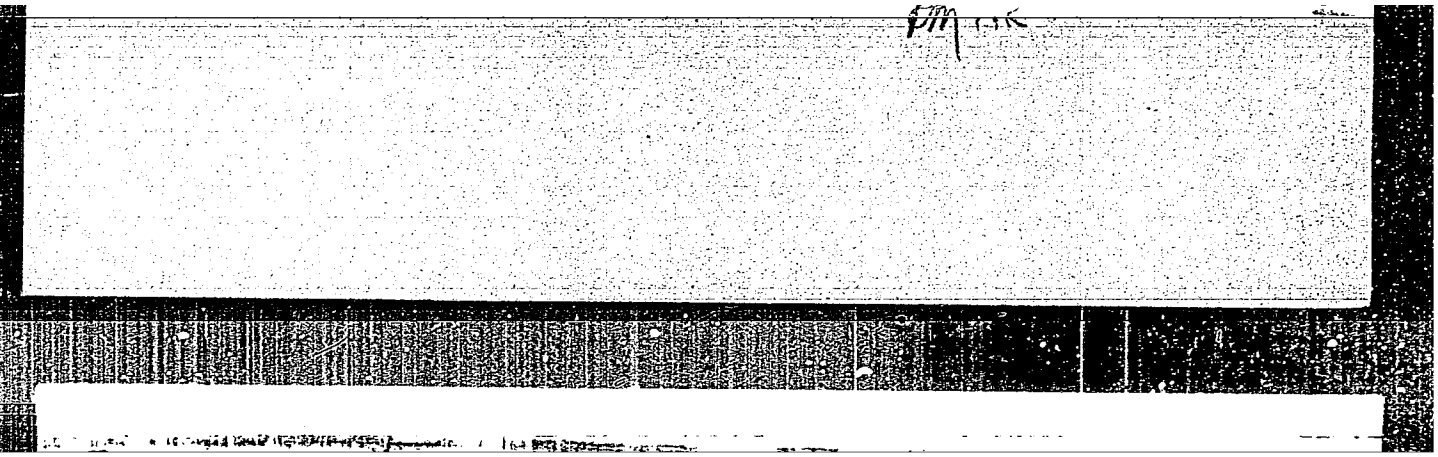
1. Chlen-korrespondent AN SSSR (for Alimarin)
(Chemistry, Analytical--Quantitative)

PYATNITSKIY, I.V.

Study of oxyacid complexes. Part 1. Potentiometry and polarography of solutions of bismuth complexes with citric acid. Ukr.khim.zhur. 22 no.3:320-329 '56. (MIRA 9:9)

1.Kiyevskiy gosudarstvennyy universitet imeni T.G.Shevchenko. Kafedra analiticheskoy khimii.
(Compounds, Complex) (Bismuth) (Citric acid)

Polarographic determination of copper and bismuth in tartrate solution. I. V. Pyatnitskii and A. P. Kostyshina (State Univ., Kiev). *Ukrain. Khim. Zhur.* 22, 879-84



PYATNITSKIY, I.V.

32-6-10/54

AUTHOR PYATNITSKIY, I.V.

TITLE Development of the Polarographical Analysis of Inorganic Substances. (Razvitiye polarograficheskogo analiza neorganicheskikh veshchestv -Russian)

PERIODICAL Zavodskaya Laboratoriya, 1957, Vol 23, Nr 6, pp 668-678 (U.S.S.R.)
Received 7/1957 Reviewed 8/1957

ABSTRACT (Survey for 1954-1956)
Determination of one or several ions by means ofpolarographical analysis requires proper choice of the ground electrolyte, which mostly represents a complex connection with the elements to be investigated. Investigations were carried out in this direction in order to look for new electrolytes on the one hand and to investigate favorable conditions for the application of those already known on the other. Here the characteristics of these investigations in the course of time are described. In the paragraph on "Polarographic investigation on the bottom of solutions of arganic substances" chemical processes with multiatomic alcohol oxide acids are dealt with which form complex connections with many ions. In the paragraph "Polarography dealing with "Polarographic investigation on the bottom of solutions of inorganic acids, salts and bases" chemical processes with the application of sulphuric acid and sulphates, hydrochloric acid and chlorides, ftorides, hydrooxides as well as their quarter bases and salts are discussed. In the paragraph on "Polarographic

Card 1/2

PYATNITSKIY, I.V.; KHARCHENKO, R.S.

Extraction of citrate complexes of metals in the presence of tributylamine. Ukr. khim. zhur. 30 no.3:311-312 '64.
(MIRA 17:10)

1. Kiyevskiy gosudarstvennyy universitet im T.G. Shevchenko.

PYATNITSKIY, I.V.; DURDYYEV, M.

Solubility of the pyridine-thiocyanate complex of cobalt. Ukr. khim. zhur. 31 no. 12:1247-1253 '65 (MIRA 19:1)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.
Submitted June 18, 1964.

PYATNITSKIY, I.V.; KHARCHENKO, R.S.

Extraction by amyl alcohol of an iron citrate complex in the presence of tri-n-butylamine. Ukr. khim. zhur. 30 no.6:635-640 '64. (MIRA 18:5)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.

[illegible], I.V.

Development of the polarographic analysis of inorganic substances (survey). Zav. lab. 31 no.1:6-20 '65. (MIRA 18:3)

PYATNITSKIY, Igor' Vladimirovich; BUSEV, A.I., red.

[Analytical chemistry of cobalt] Analiticheskaia khimiia kobal'ta. Moskva, Nauka, 1965. 259 p. (MIRA 18:5)

PYATNITSKIY, I.V.; KHARCHENKO, R.S.

Effect of strong electrolytes on the extraction by amyl alcohol of a tributylaminocitrate complex of iron. Ukr. khim. zhur. 30 no.4:416-418 '64. (MIRA 17:6)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.

PYATNITSKIY, I.V.; KHARCHENKO, R.S.

Extraction of the citrate complex of iron (III) in the presence of tri-n-butylamine. Ukr. khim.zhur. 29 no.9:967-973 '63. (MIRA 17:4)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.

PYATNITSKIY, I.V.; KALASHNIK, L.M.

Determination of small amounts of molybdenum in zinc salts by its catalytic effect on the reaction of hydrogen peroxide with potassium iodide. Ukr.khim.zhur. 28 no.8:973-976 '62. (MIRA 15:11)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Molybdenum—Analysis)
(Zinc salts)
(Catalysis)

PYATNITSKIY, I.V. [Piatnyts'kyi, I.V.]; ROMANOVSKAYA, L.G.

Glycerate complexes of iron (III) in solution. Ukr.khim.zhur. 28 no.8:905-910 '62. (MIRA 15:11)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Iron compounds)
(Glycerol)

PYATNITSKIY, I.V.; KLIBUS, A.Kh.

Study of titanium complexes with glycerol and mannitol in an alkaline medium by the method of solubility using extraction. Ukr.khim.zhur. 30 no.2:151-159 '64. (MIRA 17:4)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G.Shevchenko.

PYATNITSKIY, I.V.; KLIBUS, A.Kh.

Complex formation of iron (III) with glycerol and mannitol in an alkaline medium. Ukr.Khim.zhur. 29 no.5:463-472 '63.(MIRA 16:9)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.

PYATNITSKIY, I.V.; KHOMENKO, G.A.

Composition of malonic acid complexes of copper and iron (III) in an alkaline medium determined by the extraction method. Ukr. khim. zhur. 29 no.7:685-689 '63. (MIRA 16:8)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Copper compounds) (Iron compounds)
(Malonic acid)

PYATNITSKIY, I.V.; YERISOV, V.Yu.

Coulometric determination of vanadium in titanium tetrachloride. Ukr. khim. zhur. 29 no.10:1088-1092 '63. (MIRA 17:1)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.

PYATNITSKIY, I.V.; KHOMENKO, G.A.

Use of malic acid for masking the precipitation reactions of metal hydroxides and metal hydroxyquinolinates. Ukr. khim. zhur. 29 no.8:854-856 '63. (MIRA 16:11)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.

PYATNITSKIY, I.V.; KLIBUS, A.Kh.

Photometric method for studying complexes of iron (III) and titanium (IV) with mannitol and glycerol in solutions. Ukr. khim. zhur. 29 no.4:440-449 '63. (MIRA 16:6)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Iron compounds) (Titanium compounds)
(Photometry)

PYATNITSKIY, I.V.

"Electrode processes and research methods in polarography" by IU.K.Delimarskii, A.V.Gorodyskii. Reviewed by I.V. Piatnitskii. Ukr.khim.zhur. 27 no.3:418-420 '61. (MIRA 14:11)

(Polarography)
(Delimarskii, IU.K.)
(Gorodyskii, A.V.)

PYATNITSKIY, I.V.; PILIPYUK, Ye.S.

Solubility of zirconium mandelate. Ukr. khim. zhur. 27 no.2:247-251 '61. (MIRA 14:3)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko, kafedra analiticheskoy khimii.
(Mandelic acid) (Ziriconium—Analysis)

PYATNITSKIY, Igor' Vladimirovich for Doc Chem Sci on the basis of dissertation defended 16 Jan 59 in Council of Kiev Order of Lenin State Univ im Shevchenko, entitled "Study of complexes of metals with oxyacids in solutions."

(BMViSSO USSR, 1-61, 26)

PYATNITSKIY, I.V.; KOSTYSHINA, A.P.

Study of hydroxy acid complexes by the solubility method with the use of extraction. Citric acid complexes with titanium. Izv. vys. ucheb. zav; khim. i khim. tekh. 3 no. 5:794-797 '60. (MIRA 13:12)

1. Kiyevskiy gosudarstvennyy universitet imeni T.G. Shevchenko. Kafedra analiticheskoy khimii.
(Titanium compounds) (Citric acid)

PYATNITSKIY, I.V.

Development of the polarographic analysis of inorganic ions (survey). Zav.lab. 26 no.7:798-810 '60. (MIRA 13:6)
(Polarography) (Metals--Analysis)

PYATNITSKIY, I.V., Doc Chem Sci --(diss) "Study of [redacted] complexes of metals with hydroxyacids in solutions." Kiev,1958. 31 pp (Min of Higher Education UkSSR. Kiev State U im T.G.Shevchenko), 100 copies

List of author's works, pp 29-31 (27 titles) (KL,46-58, 138)

Pyatnitskiy, I. V.

AUTHORS: Pyatnitskiy, I. V., Kostyshina, A. P. 78-2-6/43

TITLE: Comparisons Concerning the Stability of the Tartaric-Acid Complexes of Aluminum, Gallium, Indium and Thallium in Ammonia- -Hydroxide Solutions (O sravnitel'noy ustoychivosti vinnokislykh kompleksov alyuminiya, galliya, indiya i talliya v ammiachnykh rastvorakh).

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 2, pp. 292-295 (USSR).

ABSTRACT: The present paper investigates the tartaric-acid complexes of aluminum, gallium, indium and thallium-/III/ in ammonia hydroxide. The investigations show that ammoniacal tartaric- -acid solutions of aluminum, gallium and indium are stable solutions and do not yield any Tyndall effect, i.e. they are no colloidal solutions and diffuse through a cellophane-membrane. The tartaric-acid solutions of the thallium complex are instable and hydrolyze easily. A connection was found to exist between the stability of the tartaric-acid complexes of aluminum, gallium and indium and the pH-value of the hydroxide-precipitation of these metals. The tartaric-acid complex of gallium was found to be the most stable complex. The complexes of

Card 1/2

Comparisons Concerning the Stability of the Tartaric-Acid Complexes of Aluminum, Gallium, Indium and Thallium in Ammonia-Hydroxide Solutions. 78-2-6/43

aluminum and indium are weaker complexes with an almost equal stability. An exception is made by the tartaric-acid complex of thallium which according to the range of precipitation of the hydroxide has a pH-value of 2,4. Its stability would therefore correspond to the gallium-tartaric complex. There are 2 tables and 18 references, 12 of which are Slavic.

SUBMITTED: February 4, 1957

AVAILABLE: Library of Congress

Card 2/2

PYATNITSKIY, I.V.

Investigation of oxy acid complexes. Part 3: Determination of the composition of the bismuth complex of tartaric acid by the solubility method. Ukr.khim.zhur. 24 no.6:771-774 '58. (MIRA 12:3)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko, kafedra analiticheskoy khimii.
(Bismuth compounds) (Tartaric acid)

SOV/78-4-6-21/44

5(2), 5(4)

AUTHORS: Pyatnitskiy, I. V., Kostyshina, A. P.

TITLE: Comparative Stabilities of the Tartaric Acid Complexes of Aluminum, Vanadium, Iron, Titanium, and Copper in Alkaline Medium (O sravnitel'noy ustoychivosti vinnokislykh kompleksov alyuminiya, titana, vanadiya, zheleza, i medi v shchelochnoy srede)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 6, pp 1341-1346 (USSR)

ABSTRACT: The stability of the tartaric acid complexes of aluminum, vanadium, iron, and copper in an alkaline medium was investigated. A new method which uses organic solvents as extraction solvents is suggested for the determination of the ratio of two different metals which are complex-bound: A quantity of precipitants which is insufficient for the complete precipitation of the two metals is added to a solution of complex compounds of two metals and the precipitation is then extracted by organic solvents. The metal concentration is determined in the aqueous phase. The distribution constants of the oxyquinolate of aluminum, vanadium, iron, and copper were determined by extraction with chloroform and the results are given in table 1. The

Card 1/2

Comparative Stabilities of the Tartaric Acid Complexes of Aluminum, Vanadium, Iron, Titanium, and Copper in Alkaline Medium

distribution coefficient of the aluminum oxyquinolate in chloroform amounts to $K_{distribution} = 2.6.10^{-33}$; $K_{distribution} = 7.3.10^{-23}$ for VO^{2+}; $K_{distribution} = 1.5.10^{-37}$ for Fe^{3+}; and $K_{distribution} = 4.2.10^{-23}$ for Cu^{2+}. The stabilities of the tartaric acid complexes of copper and iron in alkaline media were compared and the results are given in table 2. It was found that the tartaric acid complex of iron is comparatively more stable than that of copper. Furthermore the stabilities of the tartaric acid complexes of aluminum, titanium, vanadium, and iron in ammoniacal solutions were compared. The results are given in table 3. There are 3 tables and 8 references, 7 of which are Soviet.

SUBMITTED: March 18, 1958

Card 2/2

PYATNITSKIY, I.V.; KOSTYSHINA, A.P.

Relative stability of copper, cobalt, and bismuth complexes with trioxyglutaric, tartaric, and malic acids in an alkaline medium. Ukr.khim.zhur. 25 no.1:125-128 '59. (MIRA 12:4)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Complex compounds)

5(4)
AUTHOR: Pyatnitskiy, I. V. SOV/153-58-6-4/22

TITLE: Investigation of Complexes of Oxy-acids by Means of the Solubility Method With the Use of Extraction (Issledovaniye kompleksov oksikislot metodom rastvorimosti s primeneniyem ekstragirovaniya). Tartaric Titanium Complexes (Vinnokislyye kompleksy titana)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 6, pp 20-27 (USSR)

ABSTRACT: The paper under consideration serves the purpose of determining the compositions, structures, and stabilities of the complexes, mentioned in the sub-title, which are formed in an acid or slightly alkaline solution. The principle of the preceding study (Ref 1) was maintained (investigation of the equilibrium between the iron-oxy-quinolate solution in chloroform and alkaline aqueous solutions of the oxy-acid sodium salts). In the following a more general case is discussed: over any given pH range. By means of equations (1) and (2) the author achieves the determination of the composition. Equation (3) serves the purpose of a determination of structure, and equations (4) - (11) that of the determination of stability. In the section on the

Card 1/4

experimental investigation of the tartaric titanium complexes (Refs 4-6) a description of the working method is also given. The further sections deal with the compositions of the complexes (Figs 1-4), the structures of the complexes, and their stabilities (equations (12) - (14)). On the basis of the results obtained, the author arrives at the following conclusions: 1) Besides the new investigation method proposed its physico-chemical foundations were discussed. 2) It was proved that the stabilities of metal complexes (in this case, those of titanium) with oxy acids (in this case, with tartaric acid) that have been formed by the substitution of the hydrogen atoms of the oxy groups by a metal, should most appropriately be expressed by the value of the hydrolytic instability constant. This constant takes account of the hydrolysis of the anion addendum, and reflects the following real equilibrium process:

$$Me\left[TO_2^{4-}\right]_p^{n-4p} + pHOH = pT(OH)_2^{2-} + pOH^- + Me^{n+}$$

The hydrolytic instability constant is by a simple relation connected

with the ordinary instability constant:

$$C_{hydr} = \frac{C_{H_2O}}{C_3 C_4} \cdot C_{instab.}$$

C_3 and C_4 denote the dissociation constants of the oxy groups.

3) As a result of the study of the compositions, structures, and stabilities of the tartaric titanium complexes, the following complexes were found: at pH 4.6 over the tartrate concentration range 0.05 to 0.15 M - a complex $TiOC_4H_4O_6 \cdot HC_4H_4O_6^-$. Its instability constant is $2.9 \cdot 10^{-11}$; at pH 5.5 - 6.2 and the same tartrate concentration - a complex $TiOC_4H_3O_6^-$. Its hydrolytic instability constant is $6.4 \cdot 10^{-19}$; at pH 9.0 - 9.5 and a tartrate concentration of 0.2 to 1.0 M - a complex $TiO(C_4H_3O_6)_2^{4-}$ with a hydrolytic instability constant of

Investigation of Complexes of Oxy-acids by Means of the Solubility Method With the Use of Extraction. Tartaric Titanium Complexes

SOV/153-58-6-4/22

$4.1 \cdot 10^{-26}$. There are 4 figures, 1 table, and 10 references, 7 of which are Soviet.

ASSOCIATION: Kiyevskiy gosudarstvennyy universitet im. T. G. Shevchenko, Kafedra analiticheskoy khimii (Kiyev State University imeni T. G. Shevchenko, Chair of Analytical Chemistry)

SUBMITTED: January 3, 1958

Card 4/4

PYATNITSKIY, I.V. [P'iatnyts'kyi, I.V.]; PALOSHTAN, O.R.

Relative stability of citric and trioxyglutaric acid complexes of manganese, cobalt, nickel, and copper in alkaline solutions. Nauk.zap.Kyiv.un. 16 no.15:125-128 '57. (MIRA 11:11)
(Complex compounds) (Glutaric acid)

PYATNITSKIY, I.V.; KOSTYSHINA, A.P.

Comparative stability of aluminum, gallium, indium and thallium tartrate complexes in ammonium solutions. Zhur. neorg. khim. 3 no.2:292-295 F '58. (MIRA 11:4)
(Tartrates) (Complex compounds)

PYATNITSKIY, I.V.

PYATNITSKIY, I.V.; GENDLER, S.M.

Comparative study of metal complexes with tartaric, succinic and dimethoxysuccinic acids. Zhur. ob. khim. 26 no.8:2137-2148 Ag '56. (MLRA 10:11)

1. Kiyevskiy gosudarstvennyy universitet.
(Complex compounds)

PYATNITSKIY, I. V.

G-1

Category: USSR/Analytical Chemistry - General Questions.

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30935

Author : Pyatnitskiy I. V., Kostyshina A. P.
Inst : not given
Title : Polarographic Determination of Copper and Bismuth in Tartaric Acid Solution

Orig Pub: Ukr. khim. zh., 1956, 22, No 5, 679-686

Abstract: Potentiometric study of the composition and stability of tartaric acid complexes (TC) of Bi and Cu, and description of a method that has been developed for a polarographic determination of Bi and Cu in tartaric acid solution. Composition of TC of Bi and Cu was determined at different concentrations of tartaric acid and constant pH. It was found that in the tartaric acid complexes of Bi and Cu one atom of the metal is combined with one or with two residues of tartaric acid. Equilibrium constant of the reaction of Bi-complex formation was calculated ($K = 2.2 \cdot 10^{-6}$) and also the instability constant of

-14-

Card : 1/2

PYATNITSKIY, I.V.

Composition and stability of iron complexes with citric, tartaric and trioxyglutaric acids in an alkaline medium. Ukr. khim. zhur. 23 no.5: 593-598 '57. (MLRA 10:11)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Iron compounds) (Complex compounds) (Acids, Organic)

PYATNITSKIY, I. V.

PYATNITSKIY, I.V.; KOSTYSHINA, A.P.

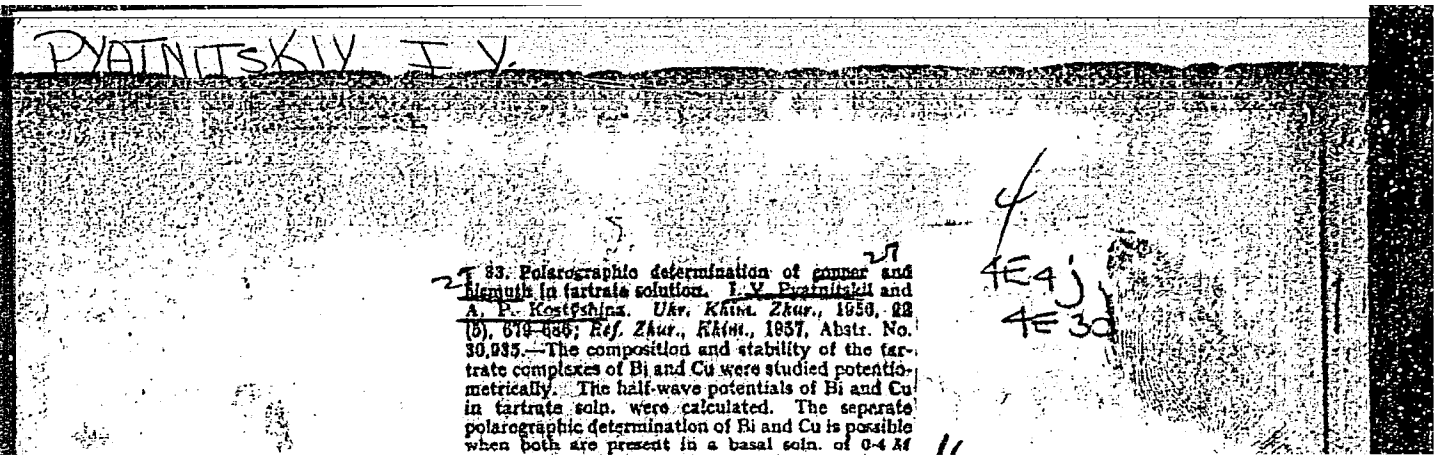
Determining the solubility products of hydroxyquinolates of gallium, indium, and thallium. Ukr. khim. zhur. 23 no.5:599-601 '57. (MLRA 10:11)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Solubility) (Quinoline) (Organometallic compounds)

PYATNITSKIY, I.V.; KOSTYSHINA, A.P.

[redacted]ting oxyacid complexes. Part 2: Using the solubility method for the investigation of copper complexes with tartaric acid. Ukr.khim.zhur. 22 no.4:434-440 '56. (MIRA 10:10)

1.Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko.
(Solubility) (Copper compounds) Tartaric acid)



PYATNITSKIY, I. V.

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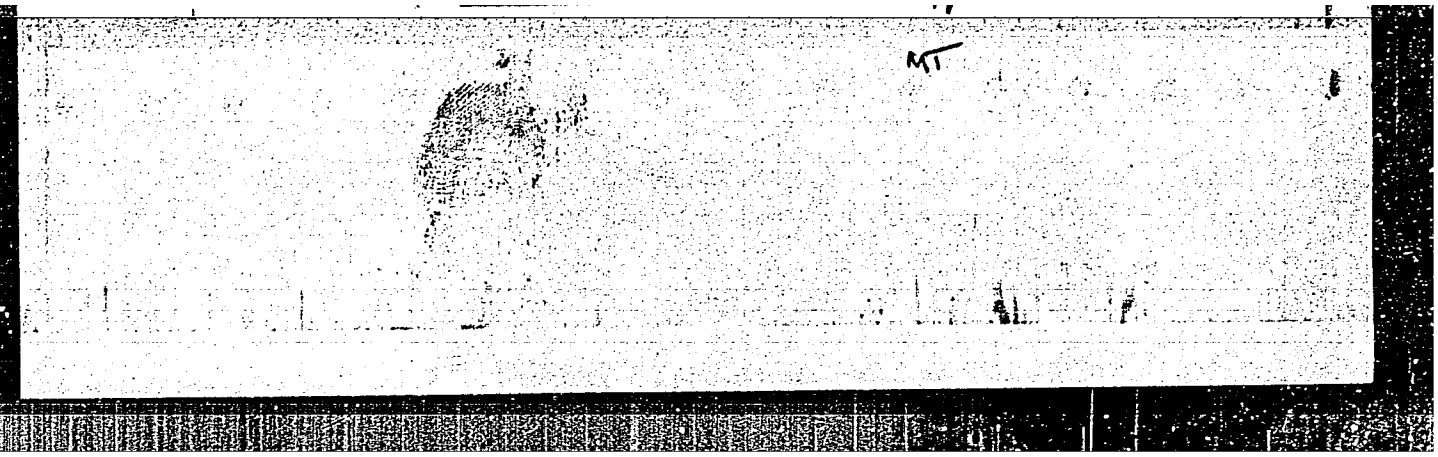
83. Polarographic determination of copper and bismuth in tartrate solution. I. V. Pyatnitskii and A. P. Kostyshina. *Ukr. Khim. Zhur.*, 1956, 22 (5), 679-686; *Ref. Zhur., Khim.*, 1957, Abstr. No. 30,935.—The composition and stability of the tartrate complexes of Bi and Cu were studied potentiometrically. The half-wave potentials of Bi and Cu in tartrate soln. were calculated. The separate polarographic determination of Bi and Cu is possible when both are present in a basal soln. of 0.4 *M*



PYATNITSKIY, I.V.; KOSTYSHINA, A.P.

Polarographic determination of copper and bismuth in tartrate solutions.
Ukr. khim. shur. 22 no.5:679-686 '56. (MLRA 10:6)

1. Kiyevskiy gosudarstvennyy universitet.
(Polarography) (Copper) (Bismuth)

PYATNITSKIY, K.

Dredgers of the Baltic Sea are gathering speed. Mor. flot. 25 no. 12:8 D '65. (MIRA 18:12)

1. Nachal'nik Baltiyskogo upravleniya morskikh putey.

PYATNITSKIY, K.K.

Porcupine in the Uzboy Kara Kum. Izv. AN Turk.SSR. Ser.biol.nauk no.2:92-93 '63. (MIRA 16:5)

1. Turkmenskaya protivochumnaya stantsiya.
(KARA KUM--PORCUPINES)

PYATNITSKIY, L.

Increasing the capacity. Obshchestv. pit. no. 8:8-10 Ag '60.
(MIRA 14:4)

1. Direktor Mariyskogo zavoda torgovogo mashinostroyeniya.
(Refrigeration and refrigerating machinery)

PYATNITSKIY, L.N.; TSUKHANOVA, O.A.

Calculation of the state of explosion products by measuring the parameters of shock waves. Inzh.-fiz.zhur. no.5:21-29 My '62. (MIRA 15:7)

1. Energeticheskiy institut imeni G.M. Krzhizhanovskogo, Moskva.
(Combustion gases) (Shock waves) (Thermodynamics)

ALAD'YEV, I.T.; ALEKSANDROV, B.K.; BAUM, V.A.; GOLOVINA, Ye.S.; GOL'DENBERG, S.A.; ZHIMERIN, D.G.; ZAKHARIN, A.G.; IYEVLEV, V.N.; KNORRE, V.G.; KOZLOV, G.I.; LEONT'YEVA, Z.I.; MARKOVICH, I.M.; MEYEROVICH, E.A.; MIKHNEVICH, G.V.; POPKOV, Z.I.; POPOV, V.A.; PREDVODITELEV, A.S.; PYATNITSKIY, L.N.; STYRIKOVICH, M.A.; TOLSTOV, Yu.G.; TSUKHANOVA, O.A.; CHUKHANOV, Z.F.; SHEYNDLIN, A.Ye.

Lev Nikolaevich Khitrin, 1907-1965; obituary. Izv. AN SSSR. Energ. i transp. no.2:159-160 Mr-Ap '65. (MIRA 18:6)

21422
S/610/60/002/000/001/002
D218/D301

11.7200

AUTHOR: Pyatnitskiy, L.N.

TITLE: Numerical integration of the equations of energy and diffusion with a source for various D/a ratios

SOURCE: Konferentsiya molodykh uchenykh, 5th. Trudy. v.2 Moscow AN SSSR. Energ. inst. 1960. 34-43

TEXT: In order to calculate the normal flame velocity in gases it is necessary to have information on chemical kinetics at high temperatures (1500-3000°K). However, it is pointed out that it is difficult to obtain such data from calculations of the elementary interactions between molecules and radicals. For practical purposes, it is sufficient to know the dependence of the total reaction rate on the temperature and the effective position of each of the original components in the reaction. The present author assumes O.A. Tsukhanova (Ref.1: Paper read

Card 1/5

Numerical integration ...

to ENIN AN SSSR, v.I, 1956, 2, 1957) that the dependence of the total reaction rate in a stoichiometric mixture of carbon monoxide and oxygen on the dimensionless concentration r and the temperature is Eq. (1)

$$\varphi = 23{,}97 \cdot 10^{12} \frac{r^{1,25}}{T^{2,25}} e^{\frac{-23000}{RT}} = F(r)_X(T)$$

where the reaction rate is in moles/cm^3/sec. In arriving at this expression, it was assumed thatthe diffusion coefficient and the temperature diffusivity are equal, and that the ratio of the heat released in the reaction to the specific heat at constant pressure (q/C_p) is constant. The aim of the present work was to elucidate the correctness of these assumptions in the case where the source function is of the specific form given by Eq. (1). The equations Eq (2)

Card 2/5

Numerical integration ...

$$u_0 \rho_0 = u \rho$$

$$\rho \approx \text{const}$$

$$\varphi = \varphi(c_1, c_2, T)$$

$$\frac{d}{dx}\left(\lambda \frac{dT}{dx}\right) - u \rho c_p \frac{dT}{dx} + q\varphi = 0$$

$$\frac{d}{dx}\left(D \rho \frac{dc_1}{dx}\right) - u \rho \frac{dc_1}{dx} - \varphi = 0$$

were solved using the mechanical integrator developed in 1941 by I.S. Bruk at the Energeticheskiy institut ANSSSR (Power Institute, AS USSR). The calculations were carried out for temperature diffusivity $\bar{a} = 1$ and diffusion coefficients $\bar{D}$=0.5, 1,2,5 and 10. The numerical results obtained are tabulated. It was found that as the ratio D/a increases, the flame velocity

Card 3/5

Numerical integration ...

decreases, but somewhat slower than predicted by the formula $U_n \sim (D/a)^{-n/2}$. In general, the dependence of the normal flame velocity on D/a cannot be approximated by a power function. The fact that q/C_p varies with temperature is less important. The correction due to the variation of this quantity is less than 8%. The present work was carried out at the Power Institute of the Academy of Sciences, USSR, in the laboratory of Corresponding Member of the Academy of Sciences USSR L.N. Khitrin. It was directed by Candidate of Physico-Mathematical Sciences O.A. Tsukhanova. Numerical integration was carried out by O.A. Iseyev. There are 4 figures, 1 table and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: I.O. Hirshfelder, J. Chem. Phys. 17,580, 1949; Trans of the Faraday Soc. 46, part 7, p 517 (1950);

Card 4/5

X

21422

S/610/60/002/000/001/002
D218/D301

Numerical integration...

J.O. Hirshfelder, Molecular Theory of gases and liquids, New York, 1954; C.F. Curtis, R.B. Birb.

Card 5/5

X

L 24077-66 EWT(1)/EWP(m)/EWT(m)/EWA(d)/T/EWA(h)/EWA(1) JKT/WW/JW/JWD/WE/JT

ACC NR: AP6011966 SOURCE CODE: UR/0281/65/000/002/0158/0159

AUTHOR: Alad'yev, I. T.; Aleksandrov, B. K.; Baum, V. A.; Golovina, Ye. S.; Gol'denberg, S. A.; Zhimerin, D. G.; Zakharin, A. G.; Iyevlev, V. N.; Knorre, V. G.; Kozlov, G. I.; Loont'yeva, Z. I.; Markovich, I. M.; Meyerovich, E. A.; Nikhnovich, G.V.; Popkov, V. I.; Popov, V. A.; Prodvoditelev, A. S.; Pyatnitskiy, L. N.; Styrikovich, M. A.; Tolstoy, Yu. G.; Tsukhanova, O. A.; Chukhanov, Z. F.; Shayndlin, A. Ye.

ORG: none

TITLE: Lev Nikolayevich Khitrin

SOURCE: AN SSSR. Izvestiya. Energetika i transport, no. 2, 1965, 158-159

TOPIC TAGS: academic personnel, physics personnel, combustion, carbon, high temperature research, plasma beam, fuel

ABSTRACT: Professor L. N. Khitrin, Corresponding Member, Academy of Sciences USSR, State Price Laureate, and Doctor of Engineering Sciences, died after a short but severe illness at the age of 58. He was well known here and abroad as an outstanding scientist and specialist in the field of combustion theory and the development of methods for speeding up burning of fuel. He began his scientific work at the All-Union Heat Engineering Institute after graduating from the physics department of Moscow University in 1930. His early work was on the propagation of flames in gases, and on heterogenous combustion. In 1948 he defended his Doctor's Dissertation on the theory of combustion of car-

Card 1/2 UDC: 621.036:92

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bon. His monograph "Combustion of Carbon" was awarded the State Prize in 1950. In 1951 he became the permanent director of the laboratory for the intensification of combustion processes of the G. M. Krzhizhanovskiy Power Institute. He was elected a corresponding member of the Academy of Sciences USSR in 1953. He headed the All Union Advisory Board on combustion, represented Soviet science at International Symposia, and was a member of the International Institute of combustion. For a number of years, he directed the Moscow general seminar on combustion, and took an active part in the work of the Scientific Council of the Academy of Sciences USSR, on high temperature heat physics, and of the scientific council on the comprehensive utilization of fuel. He devoted a large amount of attention to teaching work. He directed the Combustion Division of the Physics Department of Moscow State University. His monograph "Physics of Combustion and Explosion" (1957) is a basic text for students in this field. Three Doctor's Dissertations and fifteen Candidate Dissertations were defended under his direction. In the last years of his life he directed work on methods for comprehensive utilization of fuel at power stations so as to obtain valuable products from the mineral part of the fuel, as well as work on the physical chemical processes in a plasma stream, and the mechanism of interaction between carbon and gases. He was the author of more than 60 scientific works, for which he was awarded the Order of the Red Banner of Labor and medals. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 21, 20 / SUBM DATE: none

Card 2/2

36858
S/170/62/005/005/003/015
B104/B102

11.8.200

AUTHORS: Pyatnitskiy, L. N., Tsukhanova, O. A.

TITLE: Calculation of the state of explosion products by means of shock-wave parameter measurements

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 5, 1962, 21-29

TEXT: The states of $CH_4 + 4O_2$ combustion products were investigated in a closed tube (3 cm in diameter, 155 cm in length) consisting of interchangeable sections, one of which had two glass windows (160·3 mm); the visual section of the tube was mounted in various positions relative to the ends of the chambers. The progress of the combustion processes were photographed with an VIAB-451 (IAB-451) instrument. Time was counted from the moment of reflexion of the detonation wave from the end of the tube, when two waves are generated at the tube end, one on reflexion of the detonation complex, the other a redetonation wave. Gas velocity and pressure ahead of and behind the shock wave, and the relative velocity of the shock wave were determined from the photographs.

Card 1/2

PYATNITSKIY, L.N.

Use of the PIM-4 electron optical image converter with electronic control system for high-speed filming. Usp. nauch.fot. 9:58-63 '64.

(MIRA 18:11)

28378
S/124/61/000/008/027/042
A001/A101

11.7200

AUTHOR: Pyatnitskiy, L.N.

TITLE: Numerical integration of the equation system of energy and diffusion with a source at various D/a ratios

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 8, 1961, 74, abstract 8B520 ("Tr. V Konferentsii molodykh uchenykh. Energ. in-t AN SSSR. T.2", Moscow, 1960, 34 - 43)

TEXT: The author integrated numerically the equations of flame propagation in the stoichiometrical mixture of carbon monoxide and oxygen. The summary reaction rate is given by the formula:

$$\omega = 23.97 \times 10^{12} r^{1.25} T^{-2.25} \exp [-23{,}000/RT] \text{ mol/cm}^3\text{sec}.$$

Here r is dimensionless concentration. The system consists of equations of conservation of mass flow, equations of diffusion of one of the components (a change in concentration of the other component differs from the first by the stoichiometrical factor only), equation of heat conductivity, and condition of pressure constancy. The ratio of reaction thermal effect to heat content at constant

Card 1/2

Numerical integration ...

pressure q/c_p is assumed to be constant over the whole range of temperature variation and equal to 8,380°C. In the equations were dropped the terms of diffusion heat conductivity and thermal diffusion; the coefficients of diffusion and thermal diffusivity, multiplied by the ratio of gas density at the given point to initial density, were replaced by the constant mean values for the corresponding range of temperature variation. The magnitude of flame velocity u_o was determined by the trial-and-error method; different u_o values were assumed and the system was integrated from the side of the initial mixture. The actual value of u_o corresponded to the case when boundary conditions in the region of the burnt mixture were fulfilled. Integration was carried out on a Bruk-system mechanical integrator in the Energeticheskiy institut (Power Engineering Institute) of AS USSR. Solutions were found for the following values of the mean coefficients of thermal diffusivity $\bar{a}$ and diffusion $\bar{D}$: $\bar{a} = 1$ cm^2/sec, $\bar{D} = 0.5, 1, 2, 5, 10$ cm^2/sec. At $\bar{a} = 1$, $D = 1$, flame velocity was obtained to be equal to $u_o = 89.2 \pm 0.2$ cm/sec. The values of velocity ratios $u_o(D)/u_o(1)$ are tabulated. The results are compared with those calculated by the Zel'dovich approximate formula: $u_o(D)/u_o(1) = (D/a)^{-n/2}$, where n is the order of reaction (in the present case $n = 1.25$). It was found that with increasing D/a the flame velocity decreases, but to a somewhat lesser degree than according to Zel'dovich's formula.
[Abstracter's note: Complete translation]

Yu.R.

Card 2/2

PYATNITSKIY, L.V.

3000

1235. Development of polarographic analysis of inorganic substances. (Review of work 1952–1954.) L V Pyatnitskiĭ. *Zavod. Lab.*, 1955, 21 (7), 798–807.—A review of work carried out in Russia and other countries is given. (79 references.)
G. S. SMITH

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